

MANGO AND AVOCADO CULTIVARS IN BRAZIL¹

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Abstract. Brazil's avocado production is exceeded only by that of the Dominican Republic and Mexico, and its mango production is exceeded only by India. This production is mainly from seedling trees or from locally selected cultivars with the exception of Sao Paulo state. 'Pollock', 'Simmonds', 'Collinson', 'Wagner', 'Linda', and 'Prince' avocados have been introduced and are important, as are local selections, such as 'Quintal' and 'Fortuna'. Introduced mango cultivars 'Haden', 'Bourbon', 'Carlota' and 'Rosa' and locally-selected cultivars 'Extrema', 'Familia', 'Non-Plus-Ultra', 'Itamaraca', 'Centenario', and 'Oliveira Neto' are most widely planted. Limited breeding and cultivar selection work is underway, particularly in Sao Paulo, Minas Gerais, and Bahia states.

Brazil is a major avocado and mango producing country, although the relative importance of this production has been overlooked in most discussions of these fruit crops. Almost all of Brazil's production is consumed locally, little scientific or economic research has been done there on these fruits and there are few reports of this production in the international literature (2, 13, 14, 17). Production data (10) indicate that Brazil's avocado production of 117,000 metric tons in 1975 was exceeded only by Mexico with 243,000 metric tons and the Dominican Republic with 131,000 metric tons. Brazil's mango production of 618,000 metric tons is exceeded only by the 8,700,000 metric tons produced in India.

Brazilian horticulturists (3, 5, 12, 15, 16) agree that cultivar selection within Brazil, importation of improved cultivars from other countries and increased use of improved cultivars by orchardists are needed if this segment of the fruit industry is to expand and better supply the Brazilian consumer with these fruits. Limited work is being done on cultivar selection and evaluation there, however. This report summarizes both published information currently available within Brazil and information from discussions with Brazilian horticulturists during a recent sabbatical leave in that country.

Avocado Cultivars

West Indian seedling avocados were first introduced into Brazil in 1809 into the northern states of Amazonas and Pará, after which they spread slowly down the Atlantic coast to Rio de Janeiro and São Paulo (16). Major importations of improved cultivars, including Mexican and Guatemalan cultivars and hybrids, were first made in the 1920's (12, 16). Seedling trees are found in most Brazilian states but avocado growing can be considered a commercial fruit-growing enterprise only in São Paulo and Minas Gerais (3). The production from São Paulo of around 3.5 million 25-kg boxes from 10,000 ha is primarily from grafted plants of improved cultivars and is consumed within the state or exported to the large population area of Rio de Janeiro or to the states to the south (3). Small quantities have been exported to Europe and this market is con-

sidered very promising due to the fact that Brazilian production is not in competition with northern hemisphere fruit (3, 17). The production from Minas Gerais is consumed locally or exported to Rio de Janeiro.

Avocado trees flower from May to December in southeastern Brazil with the major blooming season from July to October. Some production is available for marketing during the entire year but the major harvest season occurs February to June from West Indian or from West Indian x Guatemalan hybrid cultivars. Prices during the major harvest season are commonly 30 to 50% as high as they are from September to January (3). Thus, emphasis has been placed on selection of late-maturing cultivars, primarily Guatemalans and Guatemalan hybrids.

Fruit size has also been a major problem. Brazilian avocados are large, often exceeding 1000 g in weight. For the local market, 600 g is considered ideal (3, 16) while the export market prefers 300-400 g (3, 12). Current cultivar recommendations in São Paulo state are listed in Table 1. Cultivars such as 'Taylor' and 'Waldin' were more widely planted in earlier years (16). 'Fuerte' is included mainly because of its quality, smaller size and greater cold tolerance. It has, however, shown a strong tendency for alternate bearing in Brazil (12, 16). 'Quintal' and 'Fortuna' are important local seedling selections. Local selections of lesser importance include the West Indian x Guatemalan hybrids 'Princesa', 'Bertanha', 'Erculano' and 'Vitória' (1, 3). Imported cultivars of lesser importance include 'Gottfried', 'Puebla', 'Nimlioh', 'Itzamna', 'Taylor', 'Booth 8', and 'Lula'.

Table 1. Recommended avocado cultivars in São Paulo state, Brazil.*

Cultivar	Race	Flower type	Harvest season
Pollock	WI	B	Jan.-March
Simmonds	WI	A	Jan.-March
Collinson	G x WI	A	May-June
Quintal	WI x G	B	May-July
Fuerte	M x G	B	May-July
Fortuna	WI x G	A	June-August
Wagner	G	A	Aug.-Oct.
Linda	G	B	Aug.-Oct.
Prince	G	B	Sept.-Nov.

*Compiled from 1, 3, 8, 12, 16.

'Pollock', 'Princesa' and 'Collinson' are recommended for early to midseason (11, 15) and 'Wagner', 'Linda' and 'Prince' for late harvest in Minas Gerais.

Avocado producers and research workers in Brazil feel that uniform harvests during all months of the year are possible and are working toward that goal (1, 3, 8, 15). Many cultivars have been selected and are under observation in Minas Gerais (15). Early to midseason selections include 'Lanna 1', a round, large, scab-resistant Guatemalan type maturing in May to June, 'Elias', a West Indian x Guatemalan hybrid maturing in June and 'J.B.1', a West Indian x Guatemalan hybrid maturing in May. Late selections include 'Corda', a round, West Indian x Guatemalan hybrid maturing in June to July, 'Graudão', a Guatemalan maturing in August, 'Isidoro', a West Indian x Guatemalan hybrid maturing in August-September, 'Wander', another hybrid quite similar to 'Prince', 'Impala', a Guatemalan maturing in August and 'Chiquito', a Guatemalan maturing in October.

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A large collection of imported cultivars and local selections is maintained in Bahia state. Limited work is being done in cultivar observation there (6, 7, 9). New and little-known cultivars there include 'G. Araujo', 'Poletto', 'Baronesa', 'Elias', 'Cardoso', 'Cornélio', 'IPEAL 1' 'IPEAL 5', and 'IPEAL 9'.

Mango Cultivars

The mango was introduced into Brazil in the 1600's from South Africa and the Philippines (12, 16) into the area around Rio de Janeiro. Later, in the 1800's, cultivars such as 'Bourbón', 'Rosa', 'Augusta' and 'Carlota' were imported. New cultivars have either been selected locally ('Brasil', 'Centenário', 'Oliveira Neto', 'Extrema', 'Família', 'Imperial', 'Itamaracá', 'Coração de Boi') or introduced since that time. 'Haden', a widely-planted cultivar in Brazil, was taken to Brazil in 1931 from Florida (16). Most of the improved varieties from Florida and the Caribbean have been introduced in recent years and are being evaluated and propagated. A total of 53 cultivars have been planted, evaluated and maintained for future use at the Escola Superior de Agricultura in Piracicaba, São Paulo (16). Another large cultivar collection is maintained in Bahia (6, 7).

Currently, Minas Gerais is the major producing state with nearly 10,000 ha producing around 225,000 metric tons. Other major producing states are Ceará, Paraíba, Goiás, Pernambuco and Maranhão (5). This production is almost exclusively from seedling trees growing in small home-orchard plantings. About 57,500 metric tons are produced on approximately 4,000 ha in São Paulo, this mainly from grafted trees (4). All of this production is consumed locally, with the exception of small amounts exported to Europe. Slightly over 43 metric tons were exported in 1973 of a total crop of 558,263 metric tons. Mangos are only available in October through March from bloom in July through October.

The major cultivar within Brazil is probably 'Bourbón' ('Espada' in northeastern Brazil), representing around 90% of the production in the state of Sergipe (9) and other northeastern states and recommended for all other producing areas (8, 11, 12, 16). Others of major importance are 'Extrema', 'Non-Plus-Ultra', 'Carlota', and 'Haden'. Current cultivar recommendations in São Paulo state are shown in Table 2. 'Haden', 'Carlota' and 'Bourbón' plus 2 local selections ('Ubá' and 'Soares Gouveia') are recommended in Minas Gerais (11). 'Bourbón', 'Rosa', 'Itamaracá' and 'Itaparica' are probably more widely planted in Bahia. A large collection of 82 cultivars is maintained there for evaluation and distribution (6, 7).

Detailed descriptions of the major Brazilian mango cultivars have been published (12, 16) and additional published information is being developed.

Table 2. Mango cultivars recommended in São Paulo state, Brazil.*

Cultivar [†]	Race	Origin
Bourbón	IC	Int.
Extrema	IC	LS
Non-Plus-Ultra	IC	LS
Itamaracá	IC	LS
Carlota	IC	Int.
Família	IC	LS
Haden	Indian	Int.
Oliveira Neto	IC	LS
Centenário	IC	LS
Brasil	IC	LS
Imperial	IC	LS
Monte d' Este	Indian	LS
Singapura	IC	Int.
Santa Alexandria	IC	LS
Coração de Boi	IC	LS

*Compiled from 3, 8, 12, 16.

[†]IC = Indochinese, LS = local selection, Int. = introduced.

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